Southern Cumberland Plateau Regional Water Supply Planning Pilot Study

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Benjamin L. Rohrbach, P.E.
Chief, Hydrology and Hydraulics
U.S. Army Corps of Engineers
Nashville District

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Presentation Outline

- Project Update Overview
- Water Demand Projections
- Existing Source Yield Estimates
- Regional Need Statements
- Alternatives Under Consideration
- OASIS Modeling of Source/Systems Reliability
- Alternative Screening Protocol and Decision Matrix

Project Update Overview

- Complete:
  - Water Demand Projections
  - Existing Water Source Yield Analyses
  - Alternative Water Source Identification
  - Preliminary Design/Yield of Alternative Water Sources
  - Preliminary Cost Estimates
- Underway:
  - Final Design/Yield of Alternative Water Sources
  - Final Cost Estimates
- Alternative Screening Matrix

Demand Projections

- Driven by Population Growth
  - Projections from UT Center for Business and Economic Research (CBER)
  - Growth in system population served in direct proportion to CBER growth estimates
- Commercial and Industrial Use
  - Proportional to population growth and density
  - Statewide evaluation of ratio of commercial/industrial to residential water use
  - Increases to 1:1 ratio at 1000 persons/sq. mile

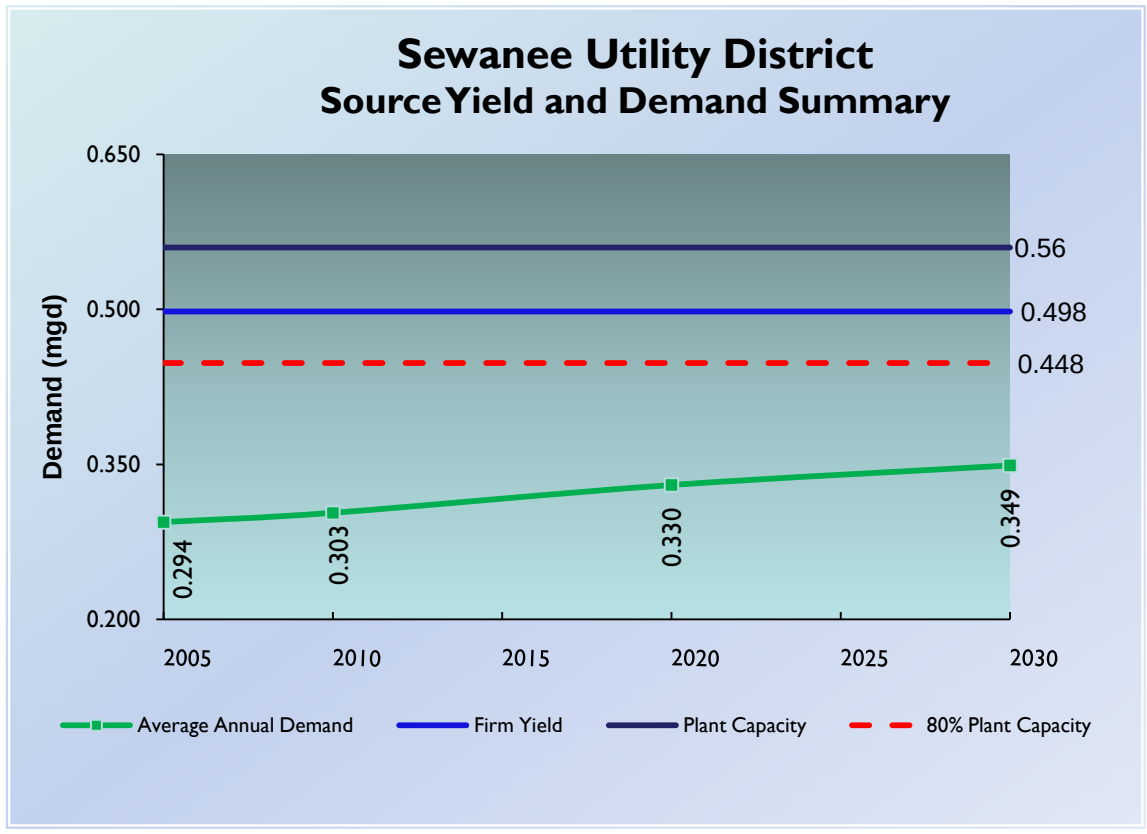
Demand Projections

Utility	2005	2010	2020	2030
Sewanee*	.294	.303	.330	.349
Monteagle*	.433	.434	.431	.434
Tracy City*	.470	.471	.467	.471
Big Creek*	.867	.881	.910	.940
Griffith Creek	.079	.079	.078	.078
Foster Falls	.034	.034	.034	.034
Cagle-Fredonia	.129	.141	.177	.201

* Average Daily Raw Water Withdrawals

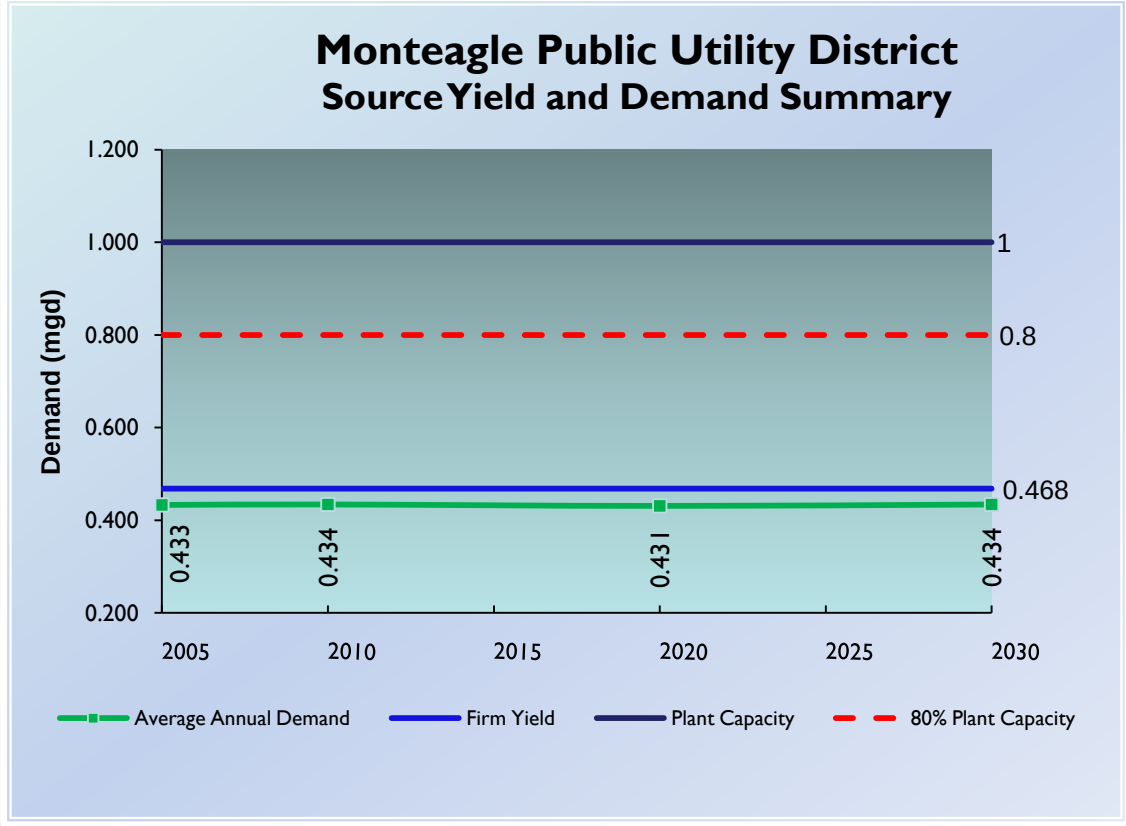
Projected Demand vs. Existing Yield

- Sewanee, TN
  - Current Sewanee average demand is .303 MGD
  - The combined firm yield of multiple sources is estimated as .498 MGD
  - Sewanee UD possesses adequate source water and treatment capacity
  - Wastewater discharge limiting factor



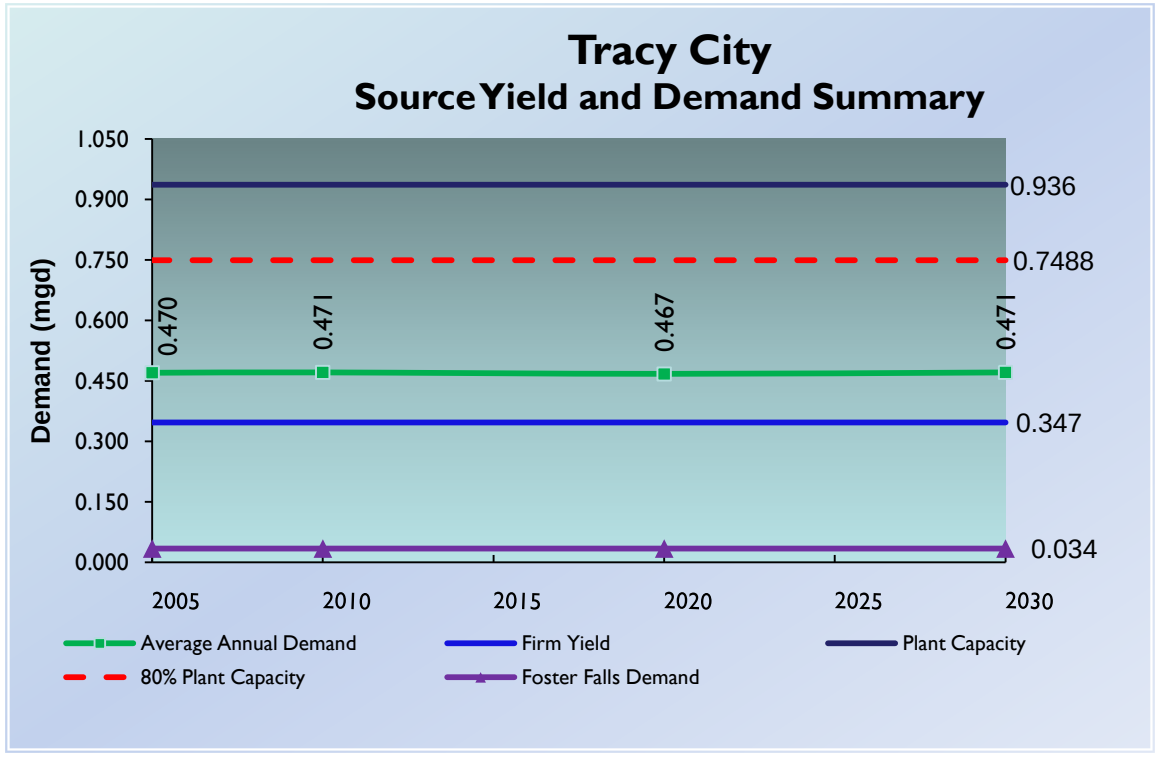
Projected Demand vs. Existing Yield

- Monteagle, TN
  - Current Monteagle average demand is .434 MGD
  - The firm yield of primary and secondary sources estimated as .468 MGD
  - Projected demand through the study period is nearly constant
  - Monteagle impacted most dramatically during recent drought



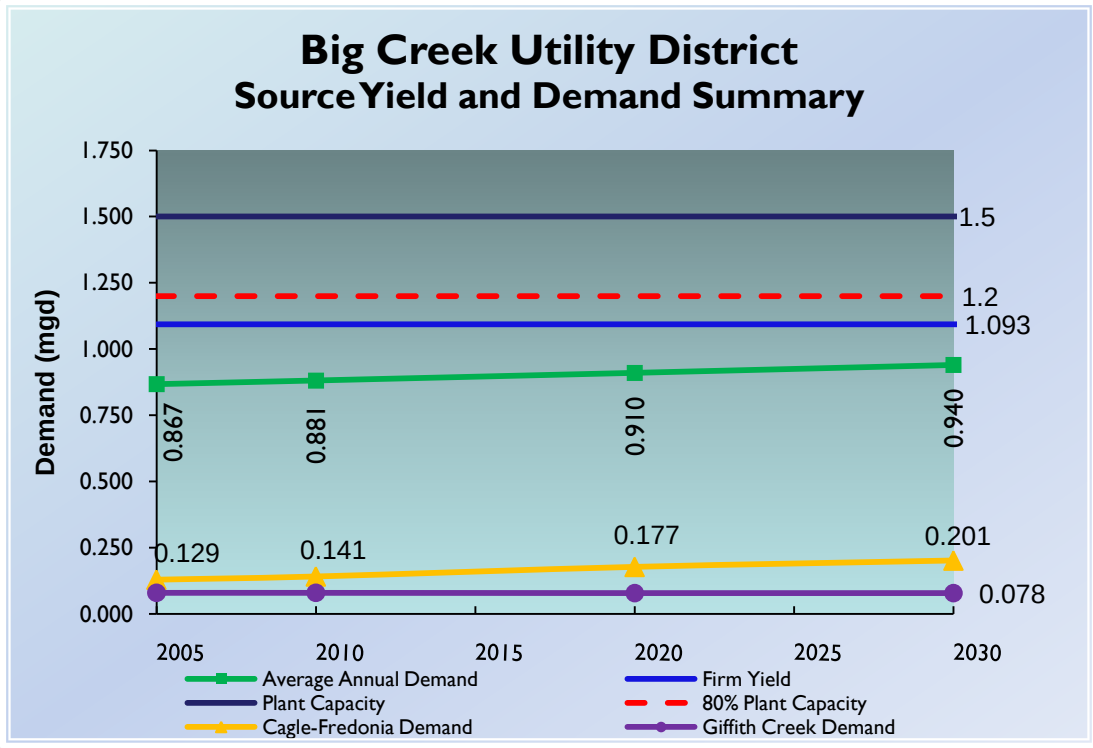
Projected Demand vs. Existing Yield

- Tracy City, TN
  - Current Tracy City average demand is .471 MGD
  - The firm yield of Big Fiery Gizzard lake estimated as .347 MGD
  - .65 MGD average release required by permit for minimum flow downstream



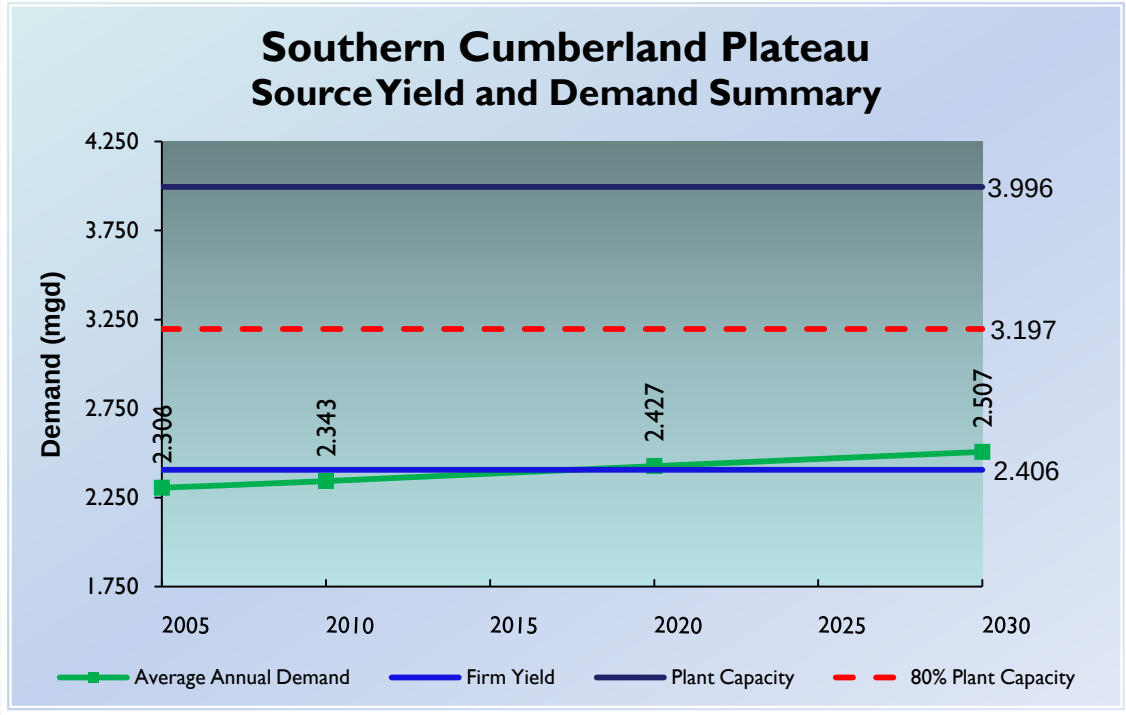
Projected Demand vs. Existing Yield

- Big Creek Utility District
  - Current Big Creek Utility District average demand is .881 MGD
  - The firm yield of Ranger Lake estimated as 1.093 MGD
  - Big Creek UD possesses adequate source water and treatment capacity



Projected Demand vs. Existing Yield

- Southern Cumberland Plateau Region
  - Existing average demand for the region is 2.343 MGD, projected to reach 2.507 MGD by 2030
  - The combined firm yield of existing sources in the region has been estimated as 2.406 MGD
  - As a region, there is a demonstrated need for additional water



Regional Need Statements

Southern Cumberland Plateau Pilot Area

- The current raw water supply in the region was perceived as barely sufficient during the recent drought. The hardest hit utility, Monteagle, managed the drought by purchasing finished water through connections to Sewanee and Tracy City, and by establishing several emergency raw water sources.

- Overall raw water demand in the region is expected to grow only slightly, from approximately 2.3 MGD to 2.5 MGD, by the year 2030. The composite firm yield of the region's raw water sources is barely sufficient to meet existing demand, indicating a need for additional source development.

- Interconnections between the utilities are well established, with existing formal contracts between Tracy City and Big Creek, as well as Tracy City and Monteagle. The utilities must maintain and improve this ability to share water among themselves. This is paramount to the region's ability to meet demand during droughts, as the small drainage areas of the South Cumberland Plateau's water sources leaves them particularly vulnerable.

Alternatives Under Consideration

Southern Cumberland Plateau Pilot Area

- Optimizing Water Sharing between Utilities
- Evaluation Utilizes OASIS
  - Existing Interconnections
  - Improved Interconnections

			Contract Information					Rates	Flow Record	
Contract	Seller	Buyer	Max (gal per month)	Max flow (gpd)	Min Pressure	Date Enacted	Expires	Rates ($/kgal)	Maximum Month	Max gpd (*avg dayx1.25)*
Yes	BCUD	TCPU	3000000		50	9/21/2009	1 yr after first delivery	$4.05	3,165,000	105,500
No	SUD	Monteagle							951,000	126,600
Yes	TCPU	Monteagl	1750000	250000		9/20/1999		$1.19 (with > 5 days notice) $2.70 (< 5 days notice & use > 50 kgpd)	6,054,000	235,000
No	TCPU	BCUD							34,546,400	1,341,600

Alternatives Under Consideration

Southern Cumberland Plateau Pilot Area

- New Reservoir on Big Creek
  - Earthen Embankment Dam
  - Preliminary Expected Project Yield – 6.11 MGD
  - Total Source Firm Yield – 7.43 MGD
  - Expected Release Requirement :
    - 2.05 cfs (@ .1 cfsm)
    - 1.32 MGD
- Purchase of Ramsey Lake
  - Convert Existing Lake to Water Supply Source
  - Preliminary Expected Project Yield - .58 MGD
  - Total Source Firm Yield - .67 MGD
  - Expected Release Requirement :
    - .14 cfs (@ .1 cfsm)
    - .09 MGD

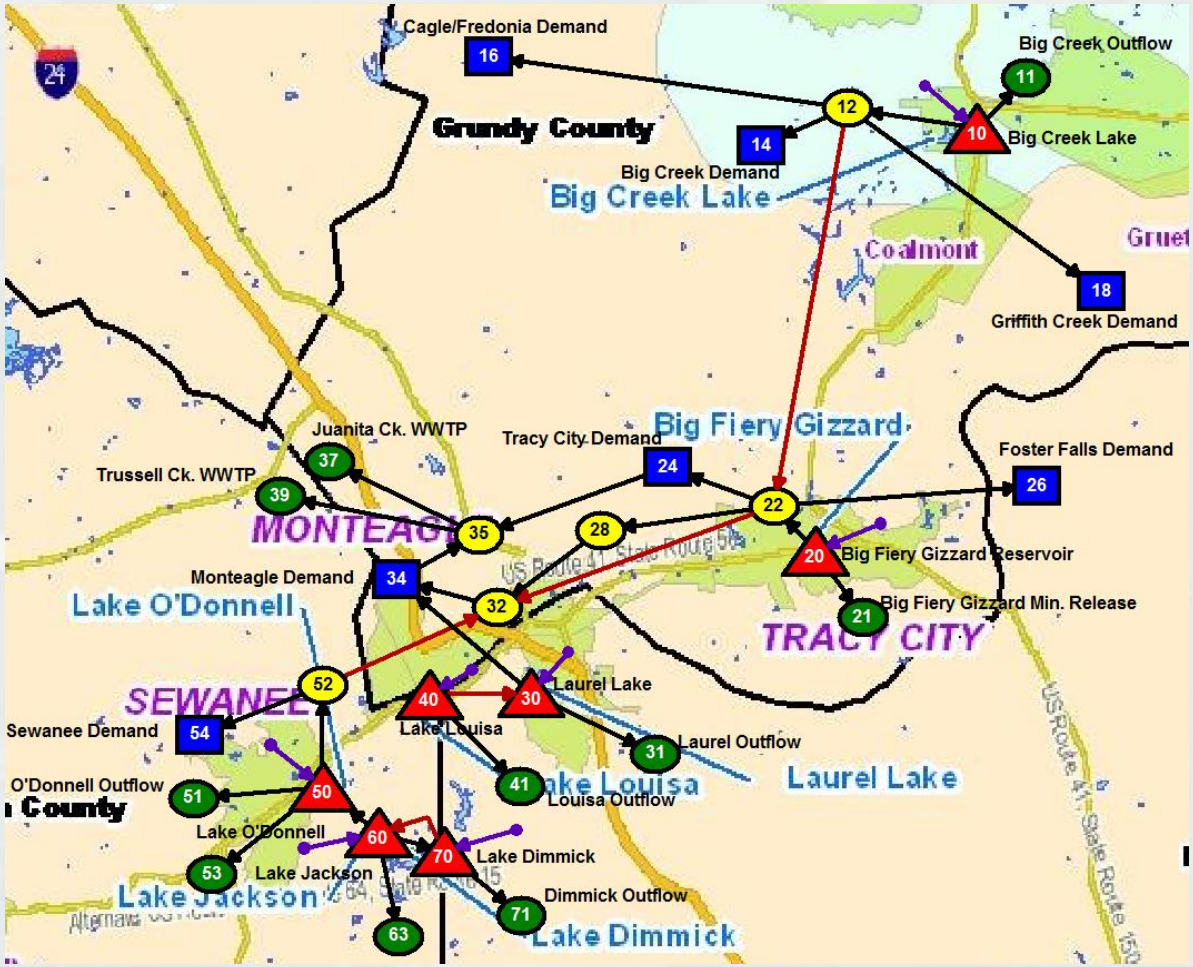
Alternatives Under Consideration

Southern Cumberland Plateau Pilot Area

- Raise Big Fiery Gizzard Lake
  - Existing Dam Raised 7 feet
  - Preliminary Expected Yield after Project - .64 MGD
  - Total Source Firm Yield – 1.28 MGD
  - Expected Release Requirement :
    - 1.0 cfs minimum by Permit (.65 MGD)
    - With 2.2 square mile watershed @ .1 cfsm - .2 cfs = .13 MGD

- Pipeline to Watts Bar Lake (South Pittsburgh)
  - 220,000 feet of transmission line to Monteagle – In 3 Phases
  - Preliminary Expected Project Yield
    - .6 MGD – Phase I
    - 3.0 MGD – Phase II
    - Extend Services – Phase III

OASIS Modeling of Source Reliability



Alternative Screening Protocol

- Tier 1:
  - Reliable Capacity
    - Need met with minimal risk
  - Project Cost
    - Feasibility, Design, Construction
  - Implementability
    - Permitting, Public Acceptance, Property Acquisitions, Constructability
  - Flexibility
    - Phased Implementation, Drought Resistance

Alternative Screening Protocol

- Tier 2:
  - Cost
    - Estimated End User Costs
  - Water Quality
    - Raw and Finished
  - Environmental
    - Benefits and Impacts
  - Multiple Purposes
    - Recreation, etc…
  - Other Factors

Tier 1 Evaluation Matrix

Alternative	Reliable Capacity	Cost	Implementability	Flexibility
Water Sharing	-	$	+	+
Reservoir on Big Creek	++	$$$	-	-
Raise Big Fiery Gizzard Lake	-	$	+	-
Purchase Ramsey Lake	+	$$	+/-	-
Big Fiery Raise + Ramsey	+	$$	+	+
Pipeline to S. Pittsburgh	+	$$$	-	+/-

- Based Upon the Tier 1 Qualitative Evaluation, Purchasing Ramsey Lake or a Combination of Raising Big Fiery Gizzard and Purchasing Ramsey Lake Appear to be the Preferred Alternative for the Region
- Tier 2 Evaluation Warranted

Questions??